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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,384	11/29/2000	James M. Ziobro	D/A0125Q XER 2 0404	6573

7590 05/21/2003

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EXAMINER

GOOD JOHNSON, MOTILEWA

ART UNIT	PAPER NUMBER
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2672

DATE MAILED: 05/21/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

37

Office Action Summary

Application No.

09/725,384

Applicant(s)

ZIOBRO, JAMES M.

Examiner

Motilewa A. Good-Johnson

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 1-3 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is responsive to the following communications: IDS, paper #4, filed 11/29/2000; Amendment A, filed 03/17/2003.
2. Claims 1-23 are pending in this application. Claims 1, 4, 10 and 21 are independent claims. Claim 3 has been amended. Claims 21-23 have been added.
3. The present title of this application is "Intelligent Color to Texture Converter" (as originally filed).

Election/Restrictions

4. Applicant's election with traverse of Group II in Paper No. 6 is acknowledged. The traversal is on the ground(s) that rendering an image in multi-color color space to a single colorant space, adding texture and applying modulating should not be restricted. This is not found persuasive because texture mapping is classified in 345/582, and would require an additional search.

The requirement is still deemed proper and is therefore made FINAL.

5. Claims 1-3 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 6.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 21-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Tretter, U.S. Patent Number 6,463,173 B1, "System and Method for Histogram Based Image Contrast Enhancement", class 382/168, 10/08/2002, filed 10/30/1995.

As per independent claim 21, a method for rendering an image described in a multi-colorant color space, in a single-colorant color space . . . comprising: examining the image to find conflicting colors in the image; (Tretter discloses a histogram generator which counts the pixels in the range of values allowable for a particular property for contrast adjustment, col. 6, lines 26-34) creating a single colorant version of the image; (Tretter discloses an input image converted to luminance-chrominance representation and discloses the invention is applicable to all color image representations, col. 7, lines 1-5) and selectively modulating a portion of the single colorant version of the image that is associated with one of the conflicting colors. (Tretter discloses a modified histogram to adjust the value of a measurable property,

which would read on applying modulation, to produce a contrast enhanced image, col. 3, lines 56-58)

With respect to dependent claim 22, collecting a histogram of the multicolor image pixels wherein histogram bins tally and sort pixels . . . and examining the histogram to find color peaks . . . (Tretter discloses histogram bins, col. 9, lines 29-30)

With respect to dependent claim 23, examining the image to find color peaks in the image that have similar lightness (L^*). (Tretter discloses a measurable property and modifying the histogram to adjust the measurable property, col. 3, lines 50-58)

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tretter, U.S. Patent Number 6,463,173 B1, "System and Method for Histogram Based Image Contrast Enhancement", class 382/168, 10/08/2002, filed 10/30/1995.

As per independent 4, a method for rendering an image . . . comprising:
collecting histogram information from the multi-color color space image wherein bins within the histogram classify image pixels based on luminance information and hue

information (Tretter discloses RGB image data of an input image converted to luminance-chrominance representation and discloses the invention is applicable to all color image representations, col. 7, lines 1-5; and histogram bins, col. 9, lines 29-30) classifying peaks within the histogram . . . similar luminance as conflicting colors (Tretter discloses remapping of luminance values and splitting the cluster by looking at the peak to assuming a distribution for the peak and flat region, col. 8, lines 31-66) and applying modulation to at least one gray scale version of the conflicting colors . . . (Tretter discloses a modified histogram to adjust the value of a measurable property, which would read on applying modulation, to produce a contrast enhanced image, col. 3, lines 56-58)

However, it is noted that Tretter fails to disclose gray scale versions. Tretter discloses a histogram adjuster to modify the histogram according to a desired characteristic, col. 4, lines 20-27. It would have been obvious to one of ordinary skill in the art at the time of the invention to include versions as the desired characteristic of Tretter, to be able to better differentiate between image regions and thus improve the output image quality.

With respect to dependent claim 5, before the step of classifying, locating peaks within the histogram data. (Tretter discloses searching among the clusters for peak or flat regions, col. 8, lines 59-61)

With respect to dependent claim 6, applying modulation further comprises associating a unique modulation to each of the gray scale versions. (Tretter discloses performing histogram equalization; i.e. the pixel values are altered to make distribution

of gray level values as uniform, col. 1, lines 63-65; to produce a modified histogram to adjust the value of a measurable property, col. 3, lines 55-58)

With respect to dependent claim 7, measuring a color distance between at least one pixel in the image and at least one conflicting color; applying an attenuated modulation to at least one pixel in the gray scale version of the image . . . (Tretter discloses measuring a distance in the RGB color space, col. 7, lines 34 – col. 8, line 20)

With respect to dependent claim 8, applying an attenuated modulation to at least one pixel in the gray scale version of the image, the attenuation ranging from zero to one hundred percent of a reference modulation . . . attenuation being a non-linear function of the measure color . . . (Tretter discloses the contrast enhancer remaps the luminance values to new luminance values and applying a weighting factor between 0 and 1 for the luminance histogram remapper, col. 10, lines 65 – col. 11, line 40)

With respect to dependent claim 9, applying an attenuated modulation to at least one pixel in the gray scale version of the image, the attenuation ranging from zero to one hundred percent of a reference modulation . . . attenuation being a linear function of the measure color . . . (Tretter discloses pixel remapping, which uses weighting factors of 0, 0.5, and 1, producing modified histograms, and the data in any histogram bins can be remapped to a different value, col. 11, lines 40-65)

As per independent claim 10, an image processor operative to generate a single colorant version of a color image . . . comprising: an image analyzer operative to find and classify conflicting colors in the color image; (Tretter discloses an image transformer which accepts an input image and transforms the image into a image

having a property for contrast enhancement, which reads on finding conflicting colors, col. 6, lines 15-25) and a gray scale modulator operative to add modulations to gray scale versions . . . (Tretter discloses a contrast enhancer which a modified histogram to adjust the value of a measurable property, which would read on applying modulation, to produce a contrast enhanced image, col. 3, lines 56-58.)

However, it is noted that Tretter fails to disclose gray scale versions. Tretter discloses a histogram adjuster to modify the histogram according to a desired characteristic, col. 4, lines 20-27. It would have been obvious to one of ordinary skill in the art at the time of the invention to include versions as the desired characteristic of Tretter, to be able to better differentiate between image regions and thus improve the output image quality.

With respect to dependent claim 11, a histogram collector operative to classify pixels in the color image based on a characteristic that is also used to generate a single colorant version . . . (Tretter discloses a histogram generator which counts the pixels in the range of values allowable for a particular property for contrast adjustment, col. 6, lines 26-34)

With respect to dependent claim 12, a conflicting color detector operative to examine the histogram and find pixels that are similar with respect to the characteristic that is used to generate a single colorant version . . . (Tretter discloses performing histogram equalization or stretching and using a luminance histogram remapper to remap pixel values, col. 6, lines 42-46)

With respect to dependent claim 13, a color relationship discriminator operative to receive conflicting color classification information from the image analyzer and color image pixel information . . . (Tretter discloses color transformation, which receives the color image representation and transforms the color image to a range appropriate for the luminance-chrominance representation, col. 7, line 1 – col. 8, line 20)

With respect to dependent claim 14, a modulation attenuator operative to attenuate a gray scale modulation based on the relationship between the color image pixel and the conflicting color. (Tretter discloses adjusting the value of a measurable property, which would read on applying modulation, to produce a contrast enhanced image, col. 3, lines 56-58)

With respect to dependent claim 15, a modulation generator operative to generate a gray scale modulation for application to a gray scale version of a color. (Tretter discloses adjusting the value of a measurable property, which would read on applying modulation, to produce a contrast enhanced image, col. 3, lines 56-58)

However, it is noted that Tretter fails to disclose gray scale versions. Tretter discloses a modified histogram to adjust the value of a measurable property, which would read on applying modulation, to produce a contrast enhanced image, col. 3, lines 56-58. It would have been obvious to one of ordinary skill in the art at the time of the invention to include versions in the contrast enhanced images of Tretter, to be able to better differentiate between image regions and thus improve the output image quality.

With respect to dependent claim 16, relationship . . . is a color distance within a color space. (Tretter discloses different color spaces for transformation, col. 7, lines 25-35)

With respect to dependent claim 17, relationship . . . is a color distance within a perceptually uniform color space. (Tretter discloses a perceptually uniform colors space conversion for compression and transmission, col. 7, lines 42-45)

With respect to dependent claim 18, relationship . . . is a color distance within a CIELAB color space. (Tretter discloses the a CIE Lab color space for conversion, col. 7, lines 42-50)

With respect to dependent claim 19, image processor further comprises an image receiver. (Tretter discloses an image captured by an imaging device, which reads on an image receiver, col. 5, lines 50-51)

With respect to dependent claim 20, image receiver further comprises a xerographic printer. (Tretter discloses printers, col. 5, lines 30-41)

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6,078,687	Venkateswar	382/169	06/20/2000	12/18/1997
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Quantization for a digital printer using modulated image data.

6,556,311 B1	Benear et al.	358/1.9	04/29/2003	05/28/1997
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Luminance-based color resolution enhancement.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Motilewa A. Good-Johnson whose telephone number is (703) 305-3939. The examiner can normally be reached on Monday - Friday 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (703) 305-4713. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.


Motilewa A. Good-Johnson
Examiner
Art Unit 2672

mgj
May 17, 2003